BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name Of work : - Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

No. TC / BBMP / RI / BYT-PMC / 470 / 20-21 Date:

To
The Executive Engineer,
Bruhat Bangalore Mahanagara Palike,
Byatarayanapura Division,
No. 2152/20, Defence Colony,
Sahakara Nagar, Bangalore – 92

Dear Sir

Sub: Fourth and Part bill for the work of Package No.02 (Package consists of 14 works).

In reference to the above subject, this is to bring to your kind notice that we have scrutinized the **Fourth and Part bill** submitted by Sri.D. Narahari Benaka Developers & Project Pvt. Ltd., #34, 2nd Floor, 2nd Cross, Sampige Road, Malleswaram Bangalore-03, towards the above said work and arrived at an amount of **Rs. 1,91,91,292.55/-(Rupees One Crore Ninety One Lakh Ninety One Thousand Two Hundred Ninety Two and Paise Fifty Five Only)** The work has been completed satisfactorily

This is for your kind information.

Thank you and assuring you the best of our Services at all the times

For Tejus Consultants
(Nischal M)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Test Report on Cement

Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	19-12-2020
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	105 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	492Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	7mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	27.00%	25 % to 35

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4. The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

TEJUS CONSULTANTS

Authorised Signatory

AE(Lab)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (M sand)	**Proposed Use**	PCC
Location/Source	Site	**Date of Sampling**	19-12-2020
Period of Soaking	24 hours	**Date of Testing**	20-12-2020

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	663	646	671	
B	Weight of oven - dry sample gm.	654	637	663	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1692	1682	1696	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.659	2.665	2.652	**2.659**
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.376	1.413	1.207	**1.332**

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Authorised Signatory

AE(E-I)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	**3000** gms		
Type of Material	**Fine aggregate (M sand)**	**Proposed Use**	PCC
Sample Location	Site	**Date of Sampling**	19-12-2020
		Date of Testing	19-12-2020

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	**100**
4.75 mm	212	212	7.07	92.93	**90 - 100**
2.36 mm	318	530	17.67	82.33	**75 - 100**
1.18 mm	426	956	31.87	68.13	**55 - 90**
0.600 mm	470	1426	47.53	52.47	**35 -59**
0.300 mm	752	2178	72.60	27.40	**8-30**
0.150 mm	630	2808	93.60	6.40	**0 - 10**
Pan	192	3000			**-**

Remarks : Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Authorised Signatory

AE(A-I)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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CONSULTANTS

TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	Site	**Date of Sampling**	19-12-2020
		Date of Testing	19-12-2020

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	80	80	2.67	97.33	95-100
20.00mm	1416	1496	49.87	50.13	30-70
10.00mm	962	2458	81.93	18.07	10-35
4.75mm	452	2910	97.00	3.00	0-5
Pan	90	3000	100.00	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

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Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Test Report on Cement

Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	21-12-20
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	103 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	392 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	6mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	30.00%	25 % to 35

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TEJUS CONSULTANTS

Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE (L27)

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

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CONSULTANTS

TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (M sand)	**Proposed Use**	Concrete
Location/Source	Site	**Date of Sampling**	21-12-2020
Period of Soaking	24 hours	**Date of Testing**	22-12-2020

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	643	653	660	
B	Weight of oven - dry sample gm.	635	644	652	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1679	1685	1690	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.657	2.650	2.661	**2.656**
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.260	1.398	1.227	**1.295**

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Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	**3000** gms		
Type of Material	**Fine aggregate (M sand)**	**Proposed Use**	Concrete
Sample Location	Site	**Date of Sampling**	21-12-2020
		Date of Testing	21-12-2020

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	**100**
4.75 mm	225	225	7.50	92.50	**90 - 100**
2.36 mm	316	541	18.03	81.97	**75 - 100**
1.18 mm	426	967	32.23	67.77	**55 - 90**
0.600 mm	495	1462	48.73	51.27	**35 -59**
0.300 mm	710	2172	72.40	27.60	**8-30**
0.150 mm	646	2818	93.93	6.07	**0 - 10**
Pan	182	3000			**-**

Remarks : Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Authorised Signatory

AE (UST)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT	
Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	Site	**Date of Sampling**	21-12-2020
		Date of Testing	21-12-2020

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	83	83	2.77	97.23	95-100
20.00mm	1422	1505	50.17	49.83	30-70
10.00mm	945	2450	81.67	18.33	10-35
4.75mm	462	2912	97.07	2.93	0-5
Pan	88	3000	100.00	0.00	

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Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W-7)

TEJUS
CONSULTANTS

Test Report on Compressive strength of Solid Block

Project	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Cross sectional area	80000mm2
Size of cube	400mm x 200mm x 200mm
No. of Block Tested	1
Reference IS code:	IS:2185 (Part 1)- 2005

Sl.No.	Date of Sampling	Date of testing	Area of Cube	Failure load	Compressive strength	Obtained Average compressive strength	Minimum Required compressive strength of individual units
			mm^2	KN	N/mm^2	N/mm^2	N/mm^2
1	24-12-2020	24-12-2020	80000	406.00	5.08	5.05	5.00
2	24-12-2020	24-12-2020	80000	402.00	5.03		
3	24-12-2020	24-12-2020	80000	404.00	5.05		

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TEJUS CONSULTANTS

Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W)

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PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Name of Work	:	Improvements to roads and drains of Sanjeevini Nagar Main road to Military Compound next to Sterling apartment to Kodigehalli main road in ward no 07
No.of Sample Tested	:	3
Date of Testing	:	04-01-2021
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20}. 250mm Thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	100.00	180.00	3.385	2394.40	1.80	0.960	159.00	20.24	21.86	20.99	26.24
2	100.00	180.00	3.425	2422.69	1.80	0.960	159.23	20.27	21.90	21.02	26.27
3	100.00	180.00	3.422	2420.57	1.80	0.960	159.65	20.33	21.95	21.08	26.34

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Consultant's Representative

AE(W)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name of Work:- Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
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☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

TEST REPORT

Project	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	02-12-2020
Sample Location	Site	**Date of Testing**	02-12-2020

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	352.00	364.00	338.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	270.00	279.00	258.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	85.00	80.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.30	23.35	23.67	
5	Average Aggregate impact value	(%)	23.44			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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Assistant Executive Engineer
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BBMP, Bangalore

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	04-12-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	03-12-2020
		Date of testing:	04-12-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	388	388	3.88	96.12	95-100
22.4	1792	2180	21.80	78.20	60-80
11.2	2264	4444	44.44	55.56	40-60
4.75	2005.0	6449	64.49	35.51	25-40
2.36	1395.0	7844	78.44	21.56	15-30
0.6	772.0	8616	86.16	13.84	8.0-22.0
0.075	880.0	9496	94.96	5.04	0-8
Pan	504.0	10000			
Total	10000.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

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No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	05-12-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	04-12-2020
		Date of testing:	05-12-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	378	378	3.78	96.22	95-100
22.4	2405	2783	27.83	72.17	60-80
11.2	2605	5388	53.88	46.12	40-60
4.75	1452.0	6840	68.40	31.60	25-40
2.36	789.0	7629	76.29	23.71	15-30
0.6	705.0	8334	83.34	16.66	8.0-22.0
0.075	996.0	9330	93.30	6.70	0-8
Pan	670.0	10000			
Total	10000.0				

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Consultant's Representative

AE(Ast)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Project	Improvements to roads and drains Amruthanagara A sector and B Munishamappa Layout in ward no 07.Byataryanapura	
Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	Benaka Developers & Project Pvt.Ltd.	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**07-12-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5978	5985
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10598	10586
Wt. of sand in hole+ cone (w3) gms.	4402	4414
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3322	3334
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.36	2.37
Moisture meter reading(moisture content)	6.40	6.20
Result		
FDD(Wt.of the dry material)=(100yb/100+mc)gm/cc	2.22	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	97.71	98.29
% compaction required	98%	98%

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4.The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

Consultant's Representative

AE(Act) Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Project	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**15-12-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5981	5987
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10589	10593
Wt. of sand in hole+ cone (w3) gms.	4411	4407
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3331	3327
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.38
Moisture meter reading(moisture content)	6.30	6.30
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.22	98.44
% compaction required	98%	98%

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	23-12-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	22-12-2020
		Date of testing:	23-12-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	355	355	3.55	96.45	95-100
22.4	2415	2770	27.70	72.30	60-80
11.2	2493	5263	52.63	47.37	40-60
4.75	1483.0	6746	67.46	32.54	25-40
2.36	782.0	7528	75.28	24.72	15-30
0.6	820.0	8348	83.48	16.52	8.0-22.0
0.075	990.0	9338	93.38	6.62	0-8
Pan	662.0	10000			
Total	10000.0				

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Consultant's Representative

Assistant Executive Engr.
Kodigehalli Sub Division
BBMP, Bangalore

AE(Ltr)

Project	Improvements to roads and drains Amruthanagara K sector and Dr Munishamappa Layout in ward no 07.Byataryanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**22-12-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5965	5986
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10597	10585
Wt. of sand in hole+ cone (w3) gms.	4403	4415
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3323	3335
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.37
Moisture meter reading(moisture content)	6.40	6.20
Result		
FDD(Wt.of the dry material)=(100yb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.10	98.28
% compaction required	98%	98%

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(WT)

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	24-12-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	23-12-2020
		Date of testing:	24-12-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	392	392	3.92	96.08	95-100
22.4	2364	2756	27.56	72.44	60-80
11.2	2480	5236	52.36	47.64	40-60
4.75	1596.0	6832	68.32	31.68	25-40
2.36	788.0	7620	76.20	23.80	15-30
0.6	804.0	8424	84.24	15.76	8.0-22.0
0.075	995.0	9419	94.19	5.81	0-8
Pan	581.0	10000			
Total	10000.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(LE)

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

Project	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**29-12-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5978	5989
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10588	10592
Wt. of sand in hole+ cone (w3) gms.	4412	4408
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3332	3328
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.38
Moisture meter reading(moisture content)	6.30	6.30
Result		
FDD(Wt.of the dry material)=(100yb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.14	98.44
% compaction required	98%	98%

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE (W-7)

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name Of work : - Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**16-09-2020**
Sample Location	Site	**Date of Testing**	**16-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	363.00	352.00	338.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	271.00	265.00	256.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	92.00	87.00	82.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.34	24.72	24.26	
5	Average Aggregate impact value	(%)	24.77			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Consultant's Representative

AE(W)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	17-09-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	16-09-2020
		Date of testing:	17-09-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	355	355	3.55	96.45	95-100
22.4	2415	2770	27.70	72.30	60-80
11.2	2493	5263	52.63	47.37	40-60
4.75	1483.0	6746	67.46	32.54	25-40
2.36	782.0	7528	75.28	24.72	15-30
0.6	820.0	8348	83.48	16.52	8.0-22.0
0.075	990.0	9338	93.38	6.62	0-8
Pan	662.0	10000			
Total	10000.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W)

Consultant's Representative

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	18-09-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	17-09-2020
		Date of testing:	18-09-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	388	388	3.88	96.12	95-100
22.4	1792	2180	21.80	78.20	60-80
11.2	2264	4444	44.44	55.56	40-60
4.75	2005.0	6449	64.49	35.51	25-40
2.36	1395.0	7844	78.44	21.56	15-30
0.6	772.0	8616	86.16	13.84	8.0-22.0
0.075	880.0	9496	94.96	5.04	0-8
Pan	504.0	10000			
Total	10000.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Project	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	Site	**Date of Sampling**	**19-09-2020**
		Date of Testing	**19-09-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	609	88	520	70
16.0	12.5	1125	123	962	105
12.5	10.0	780	54	712	55
10.0	6.3	615	62	560	48
Total		**3129**	**327**	**2754**	**278**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.45
Elongation Index(%):	10.09
Combined FI+EL (%)	20.55

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W)

TEJUS

Name of Work	:	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	19-09-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 3

GRADATION FOR WMM

(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	18-09-2020
		Date of testing:	19-09-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	378	378	3.78	96.22	95-100
22.4	2405	2783	27.83	72.17	60-80
11.2	2605	5388	53.88	46.12	40-60
4.75	1452.0	6840	68.40	31.60	25-40
2.36	789.0	7629	76.29	23.71	15-30
0.6	705.0	8334	83.34	16.66	8.0-22.0
0.075	996.0	9330	93.30	6.70	0-8
Pan	670.0	10000			
Total	10000.0				

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AE(W-4)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

Project	Improvements to roads and drains from 18th Cross to JNC Circle Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**21-09-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5967	5983
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10598	10587
Wt. of sand in hole+ cone (w3) gms.	4402	4413
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3322	3333
Bulk density of sand (γs)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.37
Moisture meter reading(moisture content)	6.30	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.26	98.29
% compaction required	98%	98%

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

Project	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date: 24-09-2020	
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5977	5991
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10584	10589
Wt. of sand in hole+ cone (w3) gms.	4416	4411
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3336	3331
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.37
Moisture meter reading(moisture content)	6.20	6.30
Result		
FDD(Wt.of the dry material)=(100yb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.10	98.39
% compaction required	98%	98%

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(WT)

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name Of work : - Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	BC	**Date of Sampling**	**28-09-2020**
Sample Location	At plant	**Date of Testing**	**28-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	388.00	368.00	375.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	294.00	278.00	284.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	94.00	90.00	91.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.23	24.46	24.27	
5	Average Aggregate impact value	(%)	24.32			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	BC		**Proposed Use**	**BC**
Sample Location	At plant		**Date of Sampling**	**28-09-2020**
			Date of Testing	**28-09-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	956	88	933	74
16.0	12.5	1314	115	1254	124
12.5	10.0	516	75	445	54
10.0	6.3	496	64	432	63
Total		**3282**	**342**	**3064**	**315**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.42
Elongation Index(%):	10.28
Combined FI+EL (%)	20.70

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W7)

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	28-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	27-09-2020
		Date of testing:	28-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	103	103.0	8.58	91.42	79 - 100
9.50	84	187.0	15.58	84.42	71 - 95
4.75	195	382.0	31.83	68.17	53 - 71
2.360	160	542.0	45.17	54.83	42 - 58
1.180	140	682.0	56.83	43.17	34 - 48
0.600	128	810.0	67.50	32.50	26 - 38
0.300	103	913.0	76.08	23.92	18 - 28
0.150	96	1009.0	84.08	15.92	12 - 20
0.075	113	1122.0	93.50	6.50	4 - 10
Pan	78.0	1200.0			
Total	1200.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(Ltd)

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	28-09-2020
Type of Mix	:	BC
Sample I/D	:	BC2

GRADATION FOR BC

(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	27-09-2020	
		Date of testing:	28-09-2020	
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0	

IS Sieve size in mm	**Weight retained**	**Cummulative weight retained (gm)**	**Cummulative % of retained**	**Cummulative % of passing**	**Specification limits**
19	0	0	0.00	100.00	100.00
13.20	90	90.0	7.50	92.50	79 - 100
9.50	115	205.0	17.08	82.92	71 - 95
4.75	238	443.0	36.92	63.08	53 - 71
2.360	180	623.0	51.92	48.08	42 - 58
1.180	106	729.0	60.75	39.25	34 - 48
0.600	117	846.0	70.50	29.50	26 - 38
0.300	97	943.0	78.58	21.42	18 - 28
0.150	69	1012.0	84.33	15.67	12 - 20
0.075	112	1124.0	93.67	6.33	4 - 10
Pan	76.0	1200.0			
Total	1200.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	28-09-2020
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.748	0.759	0.788
Final weight of plate after application of tack Coat (c)	Kg	0.771	0.782	0.811
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.253	0.250
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Authorised Signatory

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	28-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	947	916
2. Weight of Mixture after extraction, g	897	867
3. Weight of Bitumen	50	49
4. Weight of filter paper before extraction, g	2.00	2.15
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	2.10	1.85
7. Weight of Bitumen & fines	52.10	50.85
8. Bitumen content in %	5.50	5.55
9. Average Bitumen content in %	**5.53**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Plant/Site	Date of Sampling:	27-09-2020
		Date of testing:	28-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	897.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	88	88.0	9.81	90.19	79 - 100
9.50	123	211.0	23.52	76.48	71 - 95
4.75	94	305.0	34.00	66.00	53 - 71
2.360	120	425.0	47.38	52.62	42 - 58
1.180	114	539.0	60.09	39.91	34 - 48
0.600	98	637.0	71.01	28.99	26 - 38
0.300	62	699.0	77.93	22.07	18 - 28
0.150	55	754.0	84.06	15.94	12 - 20
0.075	92	846.0	94.31	5.69	4 - 10
Pan	51.0	897.0			
Total	897.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(KSH)

TEJUS CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	29-09-2020
Type of Mix :	Tack coat
Sample I/D :	2

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.784	0.769	0.788
Final weight of plate after application of tack Coat (c)	Kg	0.807	0.792	0.811
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.256	0.251
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Authorised Signatory

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to roads and drains from 18th Cross to JNC Circle(Left Hand Side and Right Hand Side Roads from Renuka Yellamma Temple Road to JNC Circle) in Ward No. 7 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	29-09-2020
Type of Mix	:	BC
Sample I/D	:	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	939	957
2. Weight of Mixture after extraction, g	889	906
3. Weight of Bitumen	50	51
4. Weight of filter paper before extraction, g	2.00	2.15
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	2.10	1.85
7. Weight of Bitumen & fines	52.10	52.85
8. Bitumen content in %	5.55	5.52
9. Average Bitumen content in %	5.54	
10. Minimum Bitumen content in %	5.80	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	Plant/Site	Date of Sampling:	28-09-2020
		Date of testing:	29-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	889.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	83	83.0	9.34	90.66	79 - 100
9.50	119	202.0	22.72	77.28	71 - 95
4.75	98	300.0	33.75	66.25	53 - 71
2.360	148	448.0	50.39	49.61	42 - 58
1.180	116	564.0	63.44	36.56	34 - 48
0.600	68	632.0	71.09	28.91	26 - 38
0.300	76	708.0	79.64	20.36	18 - 28
0.150	45	753.0	84.70	15.30	12 - 20
0.075	70	823.0	92.58	7.42	4 - 10
Pan	66.0	889.0			
Total	889.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(Civil)

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name Of work : - Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**22-06-2020**
Sample Location	**Site**	**Date of Testing**	**22-06-2020**

Sl. No.	**Description**		**Test No.**			**Spec Limit (%)**
			1	**2**	**3**	
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	352.00	364.00	338.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	270.00	279.00	258.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	85.00	80.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.30	23.35	23.67	
5	Average Aggregate impact value	(%)	23.44			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W-I)

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	Site	**Date of Sampling**	**22-06-2020**
		Date of Testing	**22-06-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	626	83	522	78
16.0	12.5	1136	124	986	108
12.5	10.0	778	56	721	52
10.0	6.3	612	69	558	46
Total		**3152**	**332**	**2787**	**284**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.53
Elongation Index(%):	10.19
Combined FI+EL (%)	20.72

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	24-06-2020
Type of Mix	:	WMM
Sample I/D	:	WMM2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	23-06-2020
		Date of testing:	24-06-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	392	392	3.92	96.08	95-100
22.4	1782	2174	21.74	78.26	60-80
11.2	2582	4756	47.56	52.44	40-60
4.75	2018.0	6774	67.74	32.26	25-40
2.36	792.0	7566	75.66	24.34	15-30
0.6	822.0	8388	83.88	16.12	8.0-22.0
0.075	992.0	9380	93.80	6.20	0-8
Pan	620.0	10000			
Total	10000.0				

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BBMP, Bangalore

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	23-06-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	22-06-2020
		Date of testing:	23-06-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	378	378	3.78	96.22	95-100
22.4	1769	2147	21.47	78.53	60-80
11.2	2264	4411	44.11	55.89	40-60
4.75	2022.0	6433	64.33	35.67	25-40
2.36	1394.0	7827	78.27	21.73	15-30
0.6	778.0	8605	86.05	13.95	8.0-22.0
0.075	888.0	9493	94.93	5.07	0-8
Pan	507.0	10000			
Total	10000.0				

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Consultant's Representative

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BBMP, Bangalore

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	26-06-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 3

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	25-06-2020
		Date of testing:	26-06-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	388	388	3.88	96.12	95-100
22.4	2132	2520	25.20	74.80	60-80
11.2	2342	4862	48.62	51.38	40-60
4.75	1994.0	6856	68.56	31.44	25-40
2.36	798.0	7654	76.54	23.46	15-30
0.6	822.0	8476	84.76	15.24	8.0-22.0
0.075	996.0	9472	94.72	5.28	0-8
Pan	528.0	10000			
Total	10000.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

Project	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**29-06-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5978	5985
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10598	10586
Wt. of sand in hole+ cone (w3) gms.	4402	4414
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3322	3334
Bulk density of sand (γs)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.37
Moisture meter reading(moisture content)	6.40	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.22	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	97.71	98.29
% compaction required	98%	98%

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Consultant's Representative

Assistant Executive Engr.
Kodigehalli Sub Division
BBMP, Bangalore

Arjally. N.D
AE (Civil)

Project	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**24-09-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5977	5991
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10584	10589
Wt. of sand in hole+ cone (w3) gms.	4416	4411
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3336	3331
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.37
Moisture meter reading(moisture content)	6.20	6.30
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.10	98.39
% compaction required	98%	98%

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Consultants Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	BC	**Date of Sampling**	**28-06-2020**
Sample Location	At plant	**Date of Testing**	**28-06-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	373.00	358.00	390.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	278.00	266.00	292.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	95.00	92.00	98.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.47	25.70	25.13	
5	Average Aggregate impact value	(%)	25.43			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Consultant's Representative

N.D
AE(L-1) Assistant Ex...
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material		BC		**Proposed Use**	**BC**
Sample Location		At plant		**Date of Sampling**	28-06-2020
				Date of Testing	28-06-2020
Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	943	83	956	68
16.0	12.5	1308	115	1205	123
12.5	10.0	515	75	440	65
10.0	6.3	492	62	412	49
Total		**3258**	**335**	**3013**	**305**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.28
Elongation Index(%):	10.12
Combined FI+EL (%)	20.41

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AE (HZ)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS CONSULTANTS

Project	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**29-06-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5978	5985
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10598	10586
Wt. of sand in hole+ cone (w3) gms.	4402	4414
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3322	3334
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Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.37
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OMC	6.10%	6.10%
% compaction obtained	97.71	98.29
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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(LT)

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	29-06-2020
Type of Mix	:	BC
Sample I/D	:	BC2

GRADATION FOR BC

(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	28-06-2020	
		Date of testing:	29-06-2020	
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0	

IS Sieve size in mm	**Weight retained**	**Cummulative weight retained (gm)**	**Cummulative % of retained**	**Cummulative % of passing**	**Specification limits**
19	0	0	0.00	100.00	100.00
13.20	101	101.0	8.42	91.58	79 - 100
9.50	114	215.0	17.92	82.08	71 - 95
4.75	182	397.0	33.08	66.92	53 - 71
2.360	178	575.0	47.92	52.08	42 - 58
1.180	107	682.0	56.83	43.17	34 - 48
0.600	118	800.0	66.67	33.33	26 - 38
0.300	102	902.0	75.17	24.83	18 - 28
0.150	110	1012.0	84.33	15.67	12 - 20
0.075	112	1124.0	93.67	6.33	4 - 10
Pan	76.0	1200.0			
Total	1200.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W)

Consultant's Representative

TEJUS CONSULTANTS

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	28-06-2020
Type of Mix :	Tack coat
Sample I/D :	2

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.784	0.769	0.788
Final weight of plate after application of tack Coat (c)	Kg	0.807	0.792	0.811
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.256	0.251
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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AE(W2)

Assistant Executive Engi...
Kodigehalli Sub Division
BBMP, Bangalore

CONSULTANTS

Authorised Signatory

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	28-06-2020
Type of Mix	:	BC
Sample I/D	:	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	940	958
2. Weight of Mixture after extraction, g	890	908
3. Weight of Bitumen	50	50
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.00	4.10
6. Weight of fines, g	1.85	2.10
7. Weight of Bitumen & fines	51.85	52.10
8. Bitumen content in %	5.52	5.44
9. Average Bitumen content in %	**5.48**	
10. Minimum Bitumen content in %	**5.5 to 5.8**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Plant	Date of Sampling:	**27-06-2020**
		Date of testing:	**28-06-2020**
Type of material & Purpose:	**BC**	Oven Dry Wt.(gms):	890.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	83	83.0	9.33	90.67	79 - 100
9.50	119	202.0	22.70	77.30	71 - 95
4.75	98	300.0	33.71	66.29	53 - 71
2.360	148	448.0	50.34	49.66	42 - 58
1.180	116	564.0	63.37	36.63	34 - 48
0.600	68	632.0	71.01	28.99	26 - 38
0.300	76	708.0	79.55	20.45	18 - 28
0.150	45	753.0	84.61	15.39	12 - 20
0.075	70	823.0	92.47	7.53	4 - 10
Pan	67.0	890.0			
Total	890.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	13-07-2020
Type of Mix	:	BC
Sample I/D	:	BC1

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	12-07-2020
		Date of testing:	13-07-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	104	104.0	8.67	91.33	79 - 100
9.50	85	189.0	15.75	84.25	71 - 95
4.75	192	381.0	31.75	68.25	53 - 71
2.360	158	539.0	44.92	55.08	42 - 58
1.180	141	680.0	56.67	43.33	34 - 48
0.600	129	809.0	67.42	32.58	26 - 38
0.300	105	914.0	76.17	23.83	18 - 28
0.150	97	1011.0	84.25	15.75	12 - 20
0.075	111	1122.0	93.50	6.50	4 - 10
Pan	78.0	1200.0			
Total	1200.0				

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AE(L-7)

Assistant Executive Engineer
Kodigehalli Sub Division,
BBMP, Bangalore

Consultant's Representative

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No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	14-07-2020
Type of Mix :	Tack coat
Sample I/D :	2

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.748	0.759	0.788
Final weight of plate after application of tack Coat (c)	Kg	0.771	0.782	0.811
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.253	0.250
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Kodigehalli Sub Division
BBMP, Bangalore

Authorised Signatory

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to roads and drains from JNC Circle to Jakkur Double Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	14-07-2020
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	947	918
2. Weight of Mixture after extraction, g	896	870
3. Weight of Bitumen	51	48
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.95	2.00
7. Weight of Bitumen & fines	52.95	50.00
8. Bitumen content in %	5.59	5.45
9. Average Bitumen content in %	**5.52**	
10. Minimum Bitumen content in %	**5.5 to 5.8**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Plant	Date of Sampling:	13-07-2020
		Date of testing:	14-07-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	896.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	88	88.0	9.82	90.18	79 - 100
9.50	123	211.0	23.55	76.45	71 - 95
4.75	94	305.0	34.04	65.96	53 - 71
2.360	120	425.0	47.43	52.57	42 - 58
1.180	114	539.0	60.16	39.84	34 - 48
0.600	98	637.0	71.09	28.91	26 - 38
0.300	62	699.0	78.01	21.99	18 - 28
0.150	55	754.0	84.15	15.85	12 - 20
0.075	92	846.0	94.42	5.58	4 - 10
Pan	50.0	896.0			
Total	896.0				

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AE (Tech)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name Of work : - Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Project	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**14-09-2020**
Sample Location		**Date of Testing**	**14-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	366.00	359.00	371.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	275.00	268.00	278.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	91.00	91.00	93.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.86	25.35	25.07	
5	Average Aggregate impact value	(%)	25.09			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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4. The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

Consultant's Representative

AE (Ist)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material		WMM		**Proposed Use**	**WMM**
Sample Location		Site		**Date of Sampling**	**14-09-2020**
				Date of Testing	**14-09-2020**
Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	607	87	520	70
16.0	12.5	1105	116	1002	116
12.5	10.0	778	65	726	58
10.0	6.3	612	69	558	46
Total		**3102**	**337**	**2806**	**290**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.86
Elongation Index(%):	10.33
Combined FI+EL (%)	21.20

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Consultant's Representative

AE(UG)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	14-09-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	13-09-2020
		Date of testing:	14-09-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	358	358	3.58	96.42	95-100
22.4	2414	2772	27.72	72.28	60-80
11.2	2495	5267	52.67	47.33	40-60
4.75	1484.0	6751	67.51	32.49	25-40
2.36	785.0	7536	75.36	24.64	15-30
0.6	820.0	8356	83.56	16.44	8.0-22.0
0.075	990.0	9346	93.46	6.54	0-8
Pan	654.0	10000			
Total	10000.0				

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Consultant's Representative

AE (WST)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Project	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**18-09-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5968	5985
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10589	10586
Wt. of sand in hole+ cone (w3) gms.	4411	4414
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3331	3334
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.36	2.37
Moisture meter reading(moisture content)	6.30	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.22	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.01	98.29
% compaction required	98%	98%

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	**Date of Sampling**	**22-09-2020**
Sample Location	At plant	**Date of Testing**	**22-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	366.00	373.00	356.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	280.00	284.00	272.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	86.00	89.00	84.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.50	23.86	23.60	
5	Average Aggregate impact value	(%)	23.65			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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AE(W)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Consultant's Representative

TEJUS
CONSULTANTS

Project	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	DBM	**Proposed Use**	**DBM**
Sample Location	At plant	**Date of Sampling**	**22-09-2020**
		Date of Testing	**22-09-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7842	672	7012	384
31.5	25.0	4223	236	3522	295
25.0	20.0	2456	244	1996	226
20.0	16.0	1558	334	986	254
16.0	12.5	580	105	456	195
12.5	10.0	485	68	266	92
10.0	6.3	134	90	80	64
Total		**17278**	**1749**	**14318**	**1510**

Results

Flakiness Index(%):	10.12
Elongation Index(%):	10.55
Combined FI+EL (%)	20.67

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	23-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-1

GRADATION FOR DBM

(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	22-09-2020
		Date of testing:	23-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	85	85	5.67	94.33	90-100
19.00	115	200	13.33	86.67	71-95
13.20	226	426	28.40	71.60	56-80
4.750	348	774	51.60	48.40	38-54
2.360	186	960	64.00	36.00	28-42
0.300	284	1244	82.93	17.07	7-21
0.075	188	1432	95.47	4.53	2-8
Pan	68	1500			
Total	1500.0				

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N.D
AE(ed)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Consultant's Representative

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	23-09-2020
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.786	0.758	0.763
Final weight of plate after application of tack Coat (c)	Kg	0.809	0.781	0.786
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.252	0.251	0.253
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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M.N.D
AE (Mtl)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Consultant's Representative

TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	23-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	845	922
2. Weight of Mixture after extraction, g	809	882
3. Weight of Bitumen	36	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	38.00	42.00
8. Bitumen content in %	4.50	4.56
9. Average Bitumen content in %	4.53	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:		**Date of Sampling:**	23-09-2020
		Date of testing:	24-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	809

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	36.0	36.0	4.45	95.55	90-100
19.00	125.0	161.0	19.90	80.10	71-95
13.20	114.0	275.0	33.99	66.01	56-80
4.750	156.0	431.0	53.28	46.72	38-54
2.360	96.0	527.0	65.14	34.86	28-42
0.300	175.0	702.0	86.77	13.23	7-21
0.075	63.0	765.0	94.56	5.44	2-8
Pan	44.0	809.0			
Total	809.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Project	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	BC	**Date of Sampling**	**23-09-2020**
Sample Location	At plant	**Date of Testing**	**23-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	375.00	360.00	389.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	277.00	267.00	290.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	98.00	93.00	99.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	26.13	25.83	25.45	
5	Average Aggregate impact value	(%)	25.81			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Consultant's Representative

A.E.E. N.D

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	BC		**Proposed Use**	**BC**
Sample Location	At plant		**Date of Sampling**	23-09-2020
			Date of Testing	23-09-2020

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	945	85	957	69
16.0	12.5	1307	114	1204	122
12.5	10.0	515	75	440	65
10.0	6.3	491	65	409	47
Total		**3258**	**339**	**3010**	**303**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.41
Elongation Index(%):	10.07
Combined FI+EL (%)	20.47

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AE(W21)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Consultant's Representative

TEJUS CONSULTANTS

Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	24-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

GRADATION FOR BC

(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	23-09-2020
		Date of testing:	24-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	105	105.0	8.75	91.25	79 - 100
9.50	90	195.0	16.25	83.75	71 - 95
4.75	189	384.0	32.00	68.00	53 - 71
2.360	160	544.0	45.33	54.67	42 - 58
1.180	139	683.0	56.92	43.08	34 - 48
0.600	125	808.0	67.33	32.67	26 - 38
0.300	106	914.0	76.17	23.83	18 - 28
0.150	98	1012.0	84.33	15.67	12 - 20
0.075	110	1122.0	93.50	6.50	4 - 10
Pan	78.0	1200.0			
Total	1200.0				

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AE (Lab)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

TEST REPORT			
Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura	
Client	:	Bruhat Bengaluru Mahanagara Palike	
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	:	Benaka Developers & Project Pvt.Ltd.	
Date of Testing	:	24-09-2020	
Type of Mix	:	Tack coat	
Sample I/D	:	1	

DETERMINATION OF RATE OF SPREAD TACK COAT			
Determination	**Unit**	**Test No**	
		1	**2**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.760	0.790
Final weight of plate after application of tack Coat (c)	Kg	0.783	0.813
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq. m	0.256	0.256
Average	Kg/sq. m	0.256	
Specified Limit	Kg/sq. m	**0.250 Kg/sq.m**	

TEJUS CONSULTANTS

Consultant's Representative

AE(Civil)

Assistant Executive Engineer
Kodigehalli Sub Division.
BBMP, Bangalore

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	24-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

TEJUS CONSULTANTS

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	946	919
2. Weight of Mixture after extraction, g	896	870
3. Weight of Bitumen	50	49
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.95	2.00
7. Weight of Bitumen & fines	51.95	51.00
8. Bitumen content in %	5.49	5.55
9. Average Bitumen content in %	**5.52**	
10. Minimum Bitumen content in %	**5.50**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:		Date of Sampling:	24-09-2020
		Date of testing:	25-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	896.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	89	89.0	9.93	90.07	79 - 100
9.50	125	214.0	23.88	76.12	71 - 95
4.75	96	310.0	34.60	65.40	53 - 71
2.360	118	428.0	47.77	52.23	42 - 58
1.180	112	540.0	60.27	39.73	34 - 48
0.600	99	639.0	71.32	28.68	26 - 38
0.300	65	704.0	78.57	21.43	18 - 28
0.150	52	756.0	84.38	15.63	12 - 20
0.075	91	847.0	94.53	5.47	4 - 10
Pan	49.0	896.0			
Total	896.0				

Note:

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4. The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W7)

TEJUS
CONSULTANTS

TEST REPORT		
Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu road)in ward No 07 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	25-09-2020
Type of Mix	:	Tack coat
Sample I/D	:	1

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.800	0.820
Final weight of plate after application of tack Coat (c)	Kg	0.823	0.843
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE (ar)

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to Roads and Drains of Pampa Extension main road to Coffee board Layout Main road(via From Canara Bank ATM and Raghvendra Hotel Circle and Kuvempu Road) in Ward No 07 Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	25-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	940	960
2. Weight of Mixture after extraction, g	890	908
3. Weight of Bitumen	50	52
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.00	4.10
6. Weight of fines, g	1.85	2.10
7. Weight of Bitumen & fines	51.85	54.10
8. Bitumen content in %	5.52	5.64
9. Average Bitumen content in %	**5.58**	
10. Minimum Bitumen content in %	**5.50**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:		Date of Sampling:	**25-09-2020**
		Date of testing:	**26-09-2020**
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	890.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	83	83.0	9.33	90.67	79 - 100
9.50	119	202.0	22.70	77.30	71 - 95
4.75	98	300.0	33.71	66.29	53 - 71
2.360	148	448.0	50.34	49.66	42 - 58
1.180	116	564.0	63.37	36.63	34 - 48
0.600	68	632.0	71.01	28.99	26 - 38
0.300	76	708.0	79.55	20.45	18 - 28
0.150	45	753.0	84.61	15.39	12 - 20
0.075	70	823.0	92.47	7.53	4 - 10
Pan	67.0	890.0			
Total	890.0				

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4. The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

Consultant's Representative

AE(W2)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name of Work:- Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**03-08-2020**
Sample Location	Site	**Date of Testing**	**03-08-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	365.00	360.00	370.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	276.00	267.00	277.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	89.00	93.00	93.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.38	25.83	25.14	
5	Average Aggregate impact value	(%)	25.12			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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Consultant's Representative

AE(WT)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	Site	**Date of Sampling**	**03-08-2020**
		Date of Testing	**03-08-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	610	88	525	75
16.0	12.5	1104	116	1005	120
12.5	10.0	776	64	725	59
10.0	6.3	615	66	555	45
Total		**3105**	**334**	**2810**	**299**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.76
Elongation Index(%):	10.64
Combined FI+EL (%)	21.40

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TEJUS CONSULTANTS

Consultant's Representative

AE(WD)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	Site	**Date of Sampling**	**12-08-2020**
		Date of Testing	**12-08-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	615	90	524	78
16.0	12.5	1130	125	961	105
12.5	10.0	782	58	715	55
10.0	6.3	616	60	560	48
Total		**3143**	**333**	**2760**	**286**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.59
Elongation Index(%):	10.36
Combined FI+EL (%)	20.96

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Consultant's Representative

TEJUS CONSULTANTS

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP Bangalore

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	04-08-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	03-08-2020
		Date of testing:	04-08-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	360	360	3.60	96.40	95-100
22.4	2415	2775	27.75	72.25	60-80
11.2	2490	5265	52.65	47.35	40-60
4.75	1485.0	6750	67.50	32.50	25-40
2.36	785.0	7535	75.35	24.65	15-30
0.6	822.0	8357	83.57	16.43	8.0-22.0
0.075	989.0	9346	93.46	6.54	0-8
Pan	654.0	10000			
Total	10000.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(WZ)

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	06-08-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	05-08-2020
		Date of testing:	06-08-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	390	390	3.90	96.10	95-100
22.4	1790	2180	21.80	78.20	60-80
11.2	2265	4445	44.45	55.55	40-60
4.75	2010.0	6455	64.55	35.45	25-40
2.36	1390.0	7845	78.45	21.55	15-30
0.6	775.0	8620	86.20	13.80	8.0-22.0
0.075	881.0	9501	95.01	4.99	0-8
Pan	499.0	10000			
Total	10000.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	08-08-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 3

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	07-08-2020
		Date of testing:	08-08-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	378	378	3.78	96.22	95-100
22.4	2405	2783	27.83	72.17	60-80
11.2	2605	5388	53.88	46.12	40-60
4.75	1452.0	6840	68.40	31.60	25-40
2.36	789.0	7629	76.29	23.71	15-30
0.6	705.0	8334	83.34	16.66	8.0-22.0
0.075	996.0	9330	93.30	6.70	0-8
Pan	670.0	10000			
Total	10000.0				

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AE(WT)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	09-08-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 4

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	08-08-2020
		Date of testing:	09-08-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	388	388	3.88	96.12	95-100
22.4	2132	2520	25.20	74.80	60-80
11.2	2342	4862	48.62	51.38	40-60
4.75	1994.0	6856	68.56	31.44	25-40
2.36	798.0	7654	76.54	23.46	15-30
0.6	822.0	8476	84.76	15.24	8.0-22.0
0.075	996.0	9472	94.72	5.28	0-8
Pan	528.0	10000			
Total	10000.0				

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AE (Tech)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	12-08-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 5

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	11-08-2020
		Date of testing:	12-08-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	356	356	3.56	96.44	95-100
22.4	2522	2878	28.78	71.22	60-80
11.2	2492	5370	53.70	46.30	40-60
4.75	1422.0	6792	67.92	32.08	25-40
2.36	802.0	7594	75.94	24.06	15-30
0.6	834.0	8428	84.28	15.72	8.0-22.0
0.075	996.0	9424	94.24	5.76	0-8
Pan	576.0	10000			
Total	10000.0				

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AE (W-I)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	14-08-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 6

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	**Date of Sampling:**	13-08-2020
		Date of testing:	14-08-2020
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	366	366	3.66	96.34	95-100
22.4	2364	2730	27.30	72.70	60-80
11.2	2482	5212	52.12	47.88	40-60
4.75	1588.0	6800	68.00	32.00	25-40
2.36	798.0	7598	75.98	24.02	15-30
0.6	822.0	8420	84.20	15.80	8.0-22.0
0.075	996.0	9416	94.16	5.84	0-8
Pan	584.0	10000			
Total	10000.0				

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AE (W-I)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**07-08-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5965	5986
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10585	10587
Wt. of sand in hole+ cone (w3) gms.	4415	4413
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3335	3333
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.36	2.37
Moisture meter reading(moisture content)	6.30	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.22	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	97.84	98.34
% compaction required	98%	98%

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

TEJUS CONSULTANTS

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**14-08-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5975	5992
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10586	10587
Wt. of sand in hole+ cone (w3) gms.	4414	4413
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3334	3333
Bulk density of sand (γs)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.37
Moisture meter reading(moisture content)	6.20	6.30
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.13	98.34
% compaction required	98%	98%

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AE(WT)

Assistant Executive E...
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	**Date of Sampling**	**03-09-2020**
Sample Location	At plant	**Date of Testing**	**03-09-2020**

Sl. No.	**Description**		**Test No.**			**Spec Limit (%)**
			1	**2**	**3**	
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	368.00	375.00	358.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	282.00	286.00	273.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	86.00	89.00	85.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.37	23.73	23.74	
5	Average Aggregate impact value	(%)	23.62			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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A/Asst. E.E
AE(L-I)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofed board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material		DBM		**Proposed Use**	**DBM**
Sample Location		At plant		**Date of Sampling**	**03-09-2020**
				Date of Testing	**03-09-2020**
Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7845	675	7015	385
31.5	25.0	4224	234	3524	262
25.0	20.0	2455	245	1998	225
20.0	16.0	1558	335	985	252
16.0	12.5	575	103	454	195
12.5	10.0	485	68	265	89
10.0	6.3	134	90	85	63
Total		**17276**	**1750**	**14326**	**1471**

Results

Flakiness Index(%):	10.13
Elongation Index(%):	10.27
Combined FI+EL (%)	20.40

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Assistant Executive I
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	04-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-1

GRADATION FOR DBM

(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	03-09-2020
		Date of testing:	04-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	90	90	6.00	94.00	90-100
19.00	120	210	14.00	86.00	71-95
13.20	227	437	29.13	70.87	56-80
4.750	352	789	52.60	47.40	38-54
2.360	189	978	65.20	34.80	28-42
0.300	282	1260	84.00	16.00	7-21
0.075	185	1445	96.33	3.67	2-8
Pan	55	1500			
Total	1500.0				

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Asthlly N.D
AE(Hon)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

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CONSULTANTS

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	05-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-2

GRADATION FOR DBM

(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	04-09-2020
		Date of testing:	05-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	95	95	6.33	93.67	90-100
19.00	125	220	14.67	85.33	71-95
13.20	238	458	30.53	69.47	56-80
4.750	315	773	51.53	48.47	38-54
2.360	185	958	63.87	36.13	28-42
0.300	276	1234	82.27	17.73	7-21
0.075	189	1423	94.87	5.13	2-8
Pan	77	1500			
Total	1500.0				

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Consultant's Representative

M.N.D
AE(W-I)

Assistant Executive Engr.
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	04-09-2020
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.784	0.756	0.766
Final weight of plate after application of tack Coat (c)	Kg	0.807	0.779	0.789
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.252	0.253	0.253
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Authorised Signatory

AE (Civil)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Coffee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	04-05-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	855	920
2. Weight of Mixture after extraction, g	815	880
3. Weight of Bitumen	40	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	42.00	42.00
8. Bitumen content in %	4.91	4.57
9. Average Bitumen content in %	4.74	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Plant	**Date of Sampling:**	04-05-2020
		Date of testing:	05-05-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	815

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	38.0	38.0	4.66	95.34	90-100
19.00	126.0	164.0	20.12	79.88	71-95
13.20	115.0	279.0	34.23	65.77	56-80
4.750	157.0	436.0	53.50	46.50	38-54
2.360	95.0	531.0	65.15	34.85	28-42
0.300	174.0	705.0	86.50	13.50	7-21
0.075	62.0	767.0	94.11	5.89	2-8
Pan	48.0	815.0			
Total	815.0				

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A.N.D
AE(QC)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	05-09-2020
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.785	0.760	0.763
Final weight of plate after application of tack Coat (c)	Kg	0.808	0.783	0.786
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.252	0.251	0.253
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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AE(L-1)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Coffee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	05-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	880	938
2. Weight of Mixture after extraction, g	840	898
3. Weight of Bitumen	40	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	42.00	42.00
8. Bitumen content in %	4.77	4.48
9. Average Bitumen content in %	4.63	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Plant	**Date of Sampling:**	05-09-2020
		Date of testing:	06-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	840

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	45.0	45.0	5.36	94.64	90-100
19.00	126.0	171.0	20.36	79.64	71-95
13.20	110.0	281.0	33.45	66.55	56-80
4.750	163.0	444.0	52.86	47.14	38-54
2.360	97.0	541.0	64.40	35.60	28-42
0.300	143.0	684.0	81.43	18.57	7-21
0.075	98.0	782.0	93.10	6.90	2-8
Pan	58.0	840.0			
Total	840.0				

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AE(Ast)

Assistant Executive E.
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	BC	**Date of Sampling**	**09-09-2020**
Sample Location	At plant	**Date of Testing**	**09-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	380.00	365.00	388.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	281.00	270.00	291.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	99.00	95.00	97.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	26.05	26.03	25.00	
5	Average Aggregate impact value	(%)	25.69			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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Consultant's Representative

AE(WT)

Assistant Executive Engineer
Kodigehalli Sub Division
RRMP, Bangalore

TEJUS
CONSULTANTS

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	BC		**Proposed Use**	**BC**
Sample Location	At plant		**Date of Sampling**	09-09-2020
			Date of Testing	09-09-2020

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	940	92	955	65
16.0	12.5	1310	115	1201	125
12.5	10.0	512	72	441	62
10.0	6.3	491	61	410	45
Total		**3253**	**340**	**3007**	**297**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.45
Elongation Index(%):	9.88
Combined FI+EL (%)	20.33

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	10-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

GRADATION FOR BC

(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	09-09-2020
		Date of testing:	10-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	110	110.0	9.17	90.83	79 - 100
9.50	95	205.0	17.08	82.92	71 - 95
4.75	192	397.0	33.08	66.92	53 - 71
2.360	165	562.0	46.83	53.17	42 - 58
1.180	135	697.0	58.08	41.92	34 - 48
0.600	127	824.0	68.67	31.33	26 - 38
0.300	104	928.0	77.33	22.67	18 - 28
0.150	99	1027.0	85.58	14.42	12 - 20
0.075	107	1134.0	94.50	5.50	4 - 10
Pan	66.0	1200.0			
Total	1200.0				

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4. The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

AE(HQ)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	11-09-2020
Type of Mix :	Tack coat
Sample I/D :	2

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.748	0.759	0.788
Final weight of plate after application of tack Coat (c)	Kg	0.771	0.782	0.811
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.253	0.250
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Authorised Signatory

AE(W2)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	10-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	945	930
2. Weight of Mixture after extraction, g	895	871
3. Weight of Bitumen	50	59
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.95	2.00
7. Weight of Bitumen & fines	51.95	61.00
8. Bitumen content in %	5.50	6.56
9. Average Bitumen content in %	**6.03**	
10. Minimum Bitumen content in %	**6.00**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:		Date of Sampling:	10-09-2020
		Date of testing:	11-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	895.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	90	90.0	10.06	89.94	79 - 100
9.50	127	217.0	24.25	75.75	71 - 95
4.75	97	314.0	35.08	64.92	53 - 71
2.360	115	429.0	47.93	52.07	42 - 58
1.180	111	540.0	60.34	39.66	34 - 48
0.600	95	635.0	70.95	29.05	26 - 38
0.300	67	702.0	78.44	21.56	18 - 28
0.150	55	757.0	84.58	15.42	12 - 20
0.075	89	846.0	94.53	5.47	4 - 10
Pan	49.0	895.0			
Total	895.0				

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AE (Lab)

Assistant Executive Engineer

Consultant's Representative

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	11-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	965
2. Weight of Mixture after extraction, g	890	908
3. Weight of Bitumen	60	57
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.00	4.10
6. Weight of fines, g	1.85	2.10
7. Weight of Bitumen & fines	61.85	59.10
8. Bitumen content in %	6.51	6.12
9. Average Bitumen content in %	**6.32**	
10. Minimum Bitumen content in %	**6.00**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:		Date of Sampling:	11-09-2020
		Date of testing:	12-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	890.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	83	83.0	9.33	90.67	79 - 100
9.50	119	202.0	22.70	77.30	71 - 95
4.75	98	300.0	33.71	66.29	53 - 71
2.360	148	448.0	50.34	49.66	42 - 58
1.180	116	564.0	63.37	36.63	34 - 48
0.600	68	632.0	71.01	28.99	26 - 38
0.300	76	708.0	79.55	20.45	18 - 28
0.150	45	753.0	84.61	15.39	12 - 20
0.075	70	823.0	92.47	7.53	4 - 10
Pan	67.0	890.0			
Total	890.0				

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AE(Cy)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name Of work : - Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**23-07-2020**
Sample Location	Site	**Date of Testing**	**23-07-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	355.00	366.00	340.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	272.00	281.00	259.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	83.00	85.00	81.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.38	23.22	23.82	
5	Average Aggregate impact value	(%)	23.48			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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M.N.D

AE(WZ)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Consultant's Representative

TEJUS
CONSULTANTS

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	Site	**Date of Sampling**	**23-07-2020**
		Date of Testing	**23-07-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	610	87	515	75
16.0	12.5	1124	125	963	112
12.5	10.0	782	55	715	61
10.0	6.3	613	61	558	51
Total		**3129**	**328**	**2751**	**299**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.48
Elongation Index(%):	10.87
Combined FI+EL (%)	21.35

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Consultant's Representative

AE (NRD)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	Site	**Date of Sampling**	**24-07-2020**
		Date of Testing	**24-07-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	635	85	528	79
16.0	12.5	1138	126	985	105
12.5	10.0	775	59	720	55
10.0	6.3	611	64	556	45
Total		**3159**	**334**	**2789**	**284**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.57
Elongation Index(%):	10.18
Combined FI+EL (%)	20.76

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Consultant's Representative

Assistant Executive Engineer
Kadugodi Sub Division

TEJUS
CONSULTANTS

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	24-07-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	23-07-2020
		Date of testing:	24-07-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	385	385	3.85	96.15	95-100
22.4	1791	2176	21.76	78.24	60-80
11.2	2265	4441	44.41	55.59	40-60
4.75	2010.0	6451	64.51	35.49	25-40
2.36	1396.0	7847	78.47	21.53	15-30
0.6	771.0	8618	86.18	13.82	8.0-22.0
0.075	880.0	9498.0	94.98	5.02	0-8
Pan	502.0	10000			
Total	10000.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	25-07-2020
Type of Mix	:	WMM
Sample I/D	:	WMM 2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Site	Date of Sampling:	24-07-2020
		Date of testing:	25-07-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	375	375	3.75	96.25	95-100
22.4	2404	2779	27.79	72.21	60-80
11.2	2603	5382	53.82	46.18	40-60
4.75	1452.0	6834	68.34	31.66	25-40
2.36	785.0	7619	76.19	23.81	15-30
0.6	705.0	8324	83.24	16.76	8.0-22.0
0.075	996.0	9320	93.20	6.80	0-8
Pan	680.0	10000			
Total	10000.0				

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Asst Mgr. N.D
AE(L-2)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Consultant's Representative

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**28-07-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5966	5984
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10588	10584
Wt. of sand in hole+ cone (w3) gms.	4412	4416
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3332	3336
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.36	2.37
Moisture meter reading(moisture content)	6.40	6.30
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.22	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	97.86	98.13
% compaction required	98%	98%

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Consultant's Representative

AE(Civil)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyappalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**29-07-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Wt. of wet material from hole (Ww) gms.	5979	5989
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10583	10587
Wt. of sand in hole+ cone (w3) gms.	4417	4413
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3337	3333
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.37
Moisture meter reading(moisture content)	6.20	6.30
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.11	98.30
% compaction required	98%	98%

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AE(W)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
CONSULTANTS

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	**Date of Sampling**	**09-09-2020**
Sample Location	At plant	**Date of Testing**	**09-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	370.00	366.00	358.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	285.00	275.00	272.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	85.00	91.00	86.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.97	24.86	24.02	
5	Average Aggregate impact value	(%)	23.95			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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4.The material used in the site satisfied the standard of MORTH's 5th revision and hence in the work.

TEJUS CONSULTANTS

Consultant's Representative

AE(Civil)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	DBM		**Proposed Use**	**DBM**
Sample Location	At plant		**Date of Sampling**	**09-09-2020**
			Date of Testing	**09-09-2020**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7843	671	7015	385
31.5	25.0	4225	235	3523	294
25.0	20.0	2454	243	1994	223
20.0	16.0	1556	335	985	256
16.0	12.5	582	106	457	194
12.5	10.0	481	67	268	91
10.0	6.3	142	91	82	65
Total		**17283**	**1748**	**14324**	**1508**

Results

Flakiness Index(%):	10.11
Elongation Index(%):	10.53
Combined FI+EL (%)	20.64

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AE(WQT)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

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Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	10-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-1

GRADATION FOR DBM
(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	09-09-2020
		Date of testing:	10-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	85	85	5.67	94.33	90-100
19.00	116	201	13.40	86.60	71-95
13.20	224	425	28.33	71.67	56-80
4.750	347	772	51.47	48.53	38-54
2.360	185	957	63.80	36.20	28-42
0.300	283	1240	82.67	17.33	7-21
0.075	189	1429	95.27	4.73	2-8
Pan	71	1500			
Total	1500.0				

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AE(LT)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	10-09-2020
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.785	0.760	0.763
Final weight of plate after application of tack Coat (c)	Kg	0.808	0.783	0.786
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.252	0.251	0.253
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Consultant's Representative

AE(Civil)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	10-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	845	922
2. Weight of Mixture after extraction, g	809	882
3. Weight of Bitumen	36	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	38.00	42.00
8. Bitumen content in %	4.50	4.56
9. Average Bitumen content in %	4.53	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:		**Date of Sampling:**	10-09-2020
		Date of testing:	11-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	809

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	45.0	45.0	5.56	94.44	90-100
19.00	124.0	169.0	20.89	79.11	71-95
13.20	115.0	284.0	35.11	64.89	56-80
4.750	152.0	436.0	53.89	46.11	38-54
2.360	95.0	531.0	65.64	34.36	28-42
0.300	138.0	669.0	82.69	17.31	7-21
0.075	85.0	754.0	93.20	6.80	2-8
Pan	55.0	809.0			
Total	809.0				

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	11-09-2020
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.784	0.756	0.766
Final weight of plate after application of tack Coat (c)	Kg	0.807	0.779	0.789
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.252	0.253	0.253
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Authorised Signatory

AE (W-21)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	11-09-2020
Type of Mix	:	DBM
Sample I/D	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	876	937
2. Weight of Mixture after extraction, g	838	896
3. Weight of Bitumen	38	41
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	40.00	43.00
8. Bitumen content in %	4.57	4.59
9. Average Bitumen content in %	4.58	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Petrol bunk Side	**Date of Sampling:**	11-09-2020
		Date of testing:	12-09-2020
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	838

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	44.0	44.0	5.25	94.75	90-100
19.00	128.0	172.0	20.53	79.47	71-95
13.20	108.0	280.0	33.41	66.59	56-80
4.750	162.0	442.0	52.74	47.26	38-54
2.360	98.0	540.0	64.44	35.56	28-42
0.300	146.0	686.0	81.86	18.14	7-21
0.075	95.0	781.0	93.20	6.80	2-8
Pan	57.0	838.0			
Total	838.0				

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AE(Civil)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS
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Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	BC	**Date of Sampling**	**18-09-2020**
Sample Location	At plant	**Date of Testing**	**18-09-2020**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	375.00	362.00	385.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	275.00	262.00	289.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	100.00	100.00	96.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	26.67	27.62	24.94	
5	Average Aggregate impact value	(%)	26.41			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Project	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	BC		**Proposed Use**	**BC**
Sample Location	At plant		**Date of Sampling**	18-09-2020
			Date of Testing	18-09-2020

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	945	90	957	69
16.0	12.5	1310	110	1204	125
12.5	10.0	520	78	440	65
10.0	6.3	491	65	409	47
Total		**3266**	**343**	**3010**	**306**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.50
Elongation Index(%):	10.17
Combined FI+EL (%)	20.67

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TEJUS CONSULTANTS

Consultant's Representative

AE(W2)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	19-09-2020
Type of Mix	:	BC
Sample I/D	:	BC2

GRADATION FOR BC

(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant		Date of Sampling:	18-09-2020	
			Date of testing:	19-09-2020	
Type of material & Purpose:	BC		Oven Dry Wt.(gms):	1200.0	
IS Sieve size in mm	**Weight retained**	**Cummulative weight retained (gm)**	**Cummulative % of retained**	**Cummulative % of passing**	**Specification limits**
19	0	0	0.00	100.00	100.00
13.20	105	105.0	8.75	91.25	79 - 100
9.50	116	221.0	18.42	81.58	71 - 95
4.75	185	406.0	33.83	66.17	53 - 71
2.360	175	581.0	48.42	51.58	42 - 58
1.180	108	689.0	57.42	42.58	34 - 48
0.600	120	809.0	67.42	32.58	26 - 38
0.300	101	910.0	75.83	24.17	18 - 28
0.150	110	1020.0	85.00	15.00	12 - 20
0.075	112	1132.0	94.33	5.67	4 - 10
Pan	68.0	1200.0			
Total	1200.0				

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AE (W3)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	20-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	19-09-2020
		Date of testing:	20-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	110	110.0	9.17	90.83	79 - 100
9.50	95	205.0	17.08	82.92	71 - 95
4.75	190	395.0	32.92	67.08	53 - 71
2.360	162	557.0	46.42	53.58	42 - 58
1.180	135	692.0	57.67	42.33	34 - 48
0.600	126	818.0	68.17	31.83	26 - 38
0.300	105	923.0	76.92	23.08	18 - 28
0.150	97	1020.0	85.00	15.00	12 - 20
0.075	102	1122.0	93.50	6.50	4 - 10
Pan	78.0	1200.0			
Total	1200.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT	
Name of Work :	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	19-09-2020
Type of Mix :	Tack coat
Sample I/D :	2

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.787	0.766	0.784
Final weight of plate after application of tack Coat (c)	Kg	0.810	0.789	0.807
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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AE(W2)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Authorised Signatory

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

TEJUS CONSULTANTS

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	19-09-2020
Type of Mix	:	BC
Sample I/D	:	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	965
2. Weight of Mixture after extraction, g	890	908
3. Weight of Bitumen	60	57
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.00	4.10
6. Weight of fines, g	1.85	2.10
7. Weight of Bitumen & fines	61.85	59.10
8. Bitumen content in %	6.51	6.12
9. Average Bitumen content in %	6.32	
10. Minimum Bitumen content in %	6.00	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:		Date of Sampling:	19-09-2020
		Date of testing:	20-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	890.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	85	85.0	9.55	90.45	79 - 100
9.50	118	203.0	22.81	77.19	71 - 95
4.75	97	300.0	33.71	66.29	53 - 71
2.360	145	445.0	50.00	50.00	42 - 58
1.180	116	561.0	63.03	36.97	34 - 48
0.600	68	629.0	70.67	29.33	26 - 38
0.300	75	704.0	79.10	20.90	18 - 28
0.150	45	749.0	84.16	15.84	12 - 20
0.075	70	819.0	92.02	7.98	4 - 10
Pan	71.0	890.0			
Total	890.0				

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Consultant's Representative

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE (W-7)

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	20-09-2020
Type of Mix :	Tack coat
Sample I/D :	2

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.748	0.759	0.788
Final weight of plate after application of tack Coat (c)	Kg	0.771	0.782	0.811
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.253	0.250
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Authorised Signatory

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Package No.02 (Package consists of 14 works). Improvements to roads and drains OF Mandi MARIYAPPA Road via Mariyannapalya to Dasarahalli Main Road in Ward No.7,Byatarayanapura
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	20-09-2020
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	925
2. Weight of Mixture after extraction, g	896	870
3. Weight of Bitumen	54	55
4. Weight of filter paper before extraction, g	2.15	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.95	2.00
7. Weight of Bitumen & fines	55.95	57.00
8. Bitumen content in %	5.89	6.16
9. Average Bitumen content in %	6.03	
10. Minimum Bitumen content in %	6.00	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:		Date of Sampling:	20-09-2020
		Date of testing:	21-09-2020
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	896.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	90	90.0	10.04	89.96	79 - 100
9.50	125	215.0	24.00	76.00	71 - 95
4.75	95	310.0	34.60	65.40	53 - 71
2.360	117	427.0	47.66	52.34	42 - 58
1.180	112	539.0	60.16	39.84	34 - 48
0.600	96	635.0	70.87	29.13	26 - 38
0.300	65	700.0	78.13	21.88	18 - 28
0.150	52	752.0	83.93	16.07	12 - 20
0.075	89	841.0	93.86	6.14	4 - 10
Pan	55.0	896.0			
Total	896.0				

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AE(W)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Consultant's Representative

BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Package No.02 (Package consists of 14 works).

Name Of work: - Construction of Two RO plant in ward no. 07 Byatarayanapura

4th & PART BILL

TEST REPORT

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

Test Report on Cement

TEJUS CONSULTANTS

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	
Sample ID	Cement
Date of Sample Tested	13-10-2020
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	37 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	346 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	2mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	29.00%	25 % to 35

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TEJUS CONSULTANTS

Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	Proposed Use	concrete
Location/Source	At Site/Plant	Date of Sampling	13-10-2020
Period of Soaking	24 hours	Date of Testing	14-10-2020

Sl. No.	Test Property		TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.		648	678	658	
B	Weight of oven - dry sample gm.		641	670	648	
C	Weight of Pycnometer Filled with water gm		1275	1275	1275	
D	Weight of Pycnometer + sample + water gm		1682	1701	1690	
E	Bulk specific gravity	$\frac{B}{(C+A-D)}$	2.660	2.659	2.667	2.662
G	Absorption (%)	$\frac{(A-B)*100}{B}$	1.092	1.194	1.543	1.276

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AE(Civil)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Authorised Signatory

TEJUS
CONSULTANTS

TEST REPORT					
Clients	Bruhat Bangalore Mahanagara Palike				
Project	Construction of Two RO plant in ward no. 07 Byatarayanapura				
Consultants	Tejus Consultants, Bangalore				
Contractor	Benaka Developers & Project Pvt.Ltd.				
SIEVE ANALYSIS					
Total Weight:	3000 gms				
Type of Material	**Fine aggregate (River Sand/ M sand)**		**Proposed Use**	concrete	
Sample Location	At Site/Plant		**Date of Sampling**	13-10-2020	
			Date of Testing	13-10-2020	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing (Zone-II)**
10.00 mm	0	0	0	100.00	**100**
4.75 mm	208	208	6.93	93.07	**90 - 100**
2.36 mm	302	510	17.00	83.00	**75 - 100**
1.18 mm	402	912	30.40	69.60	**55 - 90**
0.600 mm	482	1394	46.47	53.53	**35 -59**
0.300 mm	760	2154	71.80	28.20	**8-30**
0.150 mm	638	2792	93.07	6.93	**0 - 10**
Pan	208	3000			**-**

Remarks : ✓ Satisfactory / Not Satisfactory

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AE (Tst)

Authorised Signatory

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike		
Project	Construction of Two RO plant in ward no. 07 Byatarayanapura		
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Total Weight:	10000	gms	

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	Plant/At site	**Date of Sampling**	13-10-2020
		Date of Testing	13-10-2020

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	262	262	2.62	97.38	95 - 100
10.00 mm	4832	5094	50.94	49.06	25 - 55
4.75 mm	4220	9314	93.14	6.86	0 - 10
Pan	686	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS

Authorised Signatory

TEJUS
CONSULTANTS

TEST REPORT					
Clients	Bruhat Bangalore Mahanagara Palike				
Project	Construction of Two RO plant in ward no. 07 Byatarayanapura				
Consultants	TEJUS CONSULTANTS				
Contractor	Benaka Developers & Project Pvt.Ltd.				
Total Weight:	10000 gms				
SIEVE ANALYSIS					
Type of Material	**12.5 mm down size**		**Proposed Use**	CONCRETE	
Sample Location	At Site/Plant		**Date of Sampling**	13-10-2020	
			Date of Testing	13-10-2020	
IS Sieve Size (in mm)	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**
20.0	0	0	0	100	**100**
12.5	528	528	5.28	94.72	**90-100**
10.0	4695	5223	52.23	47.77	**40-85**
4.75	4555	9778	97.78	2.22	**0-10**
Pan	222	10000			
Remarks :			✓ Satisfactory / Not Satisfactory		

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AE(M)

Assistant Executive Engineer
Kodigehalli Sub Divn
BBMP, Bangalore

Authorised Signatory

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

CIVIL XPERTS
ISO 9001:2015
CONSULTANTS & TESTING CENTER

Highway / Building Material Testing | Structural Strengthening Solutions
Quality Control / Assurance / Audit | Proof Checking (Structural Designs & Drawings)
Soil Stabilization and Shoring Services | Non - Destructive Testing

Job No.: CECTC/BD/QC/2020-21

Date: 15.10.2020

TEST RESULTS OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Client : **Bruhat Bangalore Mahanagar Palike**
Contractor : **Benaka Developers & Project Pvt.Ltd.**
Consultant : TEJUS CONSULTANTS
Name of Work : Construction of Two RO plant in ward no. 07 Byatarayanapura
Sample Identification : 8mm, 10mm, 12mm & 16mm Fe500 TMT Bars
Technical Reference : IS 1786:2008, IS 1608:2005, IS 1599:1985 (Reaffirmed 2006)
Date of test : 15.10.2020

S.No	Brand	Nominal size (dia in mm)	Mass per metre (kg/metre)	TENSILE STRENGTH		
				0.20 % proof stress/ yield stress ($N/mm^{2)}$	Tensile strength ($N/mm^{2)}$	Elongation, percent on gauge length
1	Fe 500	8	0.399	513	556	17
2	Fe 500	10	0.622	520	568	18
3	Fe 500	12	0.888	536	574	19
4	Fe 500	16	1.590	542	589	20

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

For CIVIL EXPERTS
Authorised Signature

174, Sri Ranga Complex, Amrutha Nagar Main Road, New Bank Colony, Konanakunte, Bangalore - 560 062.
Mobile : +91 97429 59595 | Tel/Fax : 080 2632 2565 | Email : civilexpertsltd@gmail.com | URL : www.civilexperts.co.in

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	17-10-2020	24-10-2020	7 days	8.120	22500	284	12.62	12.71
2	17-10-2020	24-10-2020	7 days	8.130	22500	286	12.71	
3	17-10-2020	24-10-2020	7 days	8.140	22500	288	12.80	

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Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	22-10-2020	29-10-2020	7 days	8.125	22500	286	12.71	12.79
2	22-10-2020	29-10-2020	7 days	8.144	22500	288	12.80	
3	22-10-2020	29-10-2020	7 days	8.143	22500	289	12.84	

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	28-10-2020	04-11-2020	7 days	8.121	22500	290	12.89	12.98
2	28-10-2020	04-11-2020	7 days	8.143	22500	292	12.98	
3	28-10-2020	04-11-2020	7 days	8.141	22500	294	13.07	

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TEJUS CONSULTANTS

Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE(W-I)

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

Test Report on Compressive strength of Solid Block

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Cross sectional area	80000mm2
Size of cube	400mm x 200mm x 200mm
No. of Block Tested	1
Reference IS code:	IS:2185 (Part 1)- 2005

Sl.No.	Date of Sampling	Date of testing	Area of Cube	Failure load	Compressive strength	Obtained Average compressive strength	Minimum Required compressive strength of individual units
			mm^2	KN	N/mm^2	N/mm^2	N/mm^2
1	08-11-2020	08-11-2020	80000	406.00	5.08	5.05	5.00
2	08-11-2020	08-11-2020	80000	402.00	5.03		
3	08-11-2020	08-11-2020	80000	404.00	5.05		

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AE(W4)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

Authorised Signatory

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	03-11-2020	10-11-2020	7 days	8.123	22500	291	12.93	12.86
2	03-11-2020	10-11-2020	7 days	8.145	22500	285	12.67	
3	03-11-2020	10-11-2020	7 days	8.165	22500	292	12.98	

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TEJUS CONSULTANTS

Authorised Signatory

Assistant Executive Engineer
Kudigehalli Sub Division
BBMP, Bangalore

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	17-10-2020	14-11-2020	28 days	8.130	22500	460	20.44	20.44
2	17-10-2020	14-11-2020	28 days	8.138	22500	465	20.67	
3	17-10-2020	14-11-2020	28 days	8.146	22500	455	20.22	

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Authorised Signatory

AE(WT)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	05-11-2020	12-11-2020	7 days	8.123	22500	288	12.80	12.90
2	05-11-2020	12-11-2020	7 days	8.150	22500	292	12.98	
3	05-11-2020	12-11-2020	7 days	8.143	22500	291	12.93	

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4.The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

AE [illegible]

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	09-11-2020	16-11-2020	7 days	8.120	22500	291	12.93	12.98
2	09-11-2020	16-11-2020	7 days	8.147	22500	292	12.98	
3	09-11-2020	16-11-2020	7 days	8.141	22500	293	13.02	

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TEJUS CONSULTANTS

Authorised Signatory

A.E(Act) N.D

Assistant Executive En
Kodigehalli Sub Division
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	22-10-2020	19-11-2020	14days	8.136	22500	468	20.80	20.49
2	22-10-2020	19-11-2020	14days	8.142	22500	455	20.22	
3	22-10-2020	19-11-2020	14days	8.148	22500	460	20.44	

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TEJUS CONSULTANTS

Authorised Signatory

Asst. Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES	
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Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	13-11-2020	20-11-2020	7 days	8.120	22500	294	13.07	13.11
2	13-11-2020	20-11-2020	7 days	8.140	22500	295	13.11	
3	13-11-2020	20-11-2020	7 days	8.140	22500	296	13.16	

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Authorised Signatory

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Kodigehalli Sub Division
BBMP, Bangalore

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Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	28-10-2020	25-11-2020	14days	8.135	22500	450	20.00	20.21
2	28-10-2020	25-11-2020	14days	8.141	22500	454	20.18	
3	28-10-2020	25-11-2020	14days	8.145	22500	460	20.44	

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Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	03-11-2020	01-12-2020	14days	8.138	22500	468	20.80	20.76
2	03-11-2020	01-12-2020	14days	8.145	22500	466	20.71	
3	03-11-2020	01-12-2020	14days	8.149	22500	467	20.76	

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Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	05-11-2020	03-12-2020	14days	8.135	22500	468	20.80	20.84
2	05-11-2020	03-12-2020	14days	8.141	22500	469	20.84	
3	05-11-2020	03-12-2020	14days	8.144	22500	470	20.89	

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TEJUS CONSULTANTS

Authorised Signatory

AE(Ltd)

Assistant Executive Engineer
Kodigehalli Sub Divisi
BBMP, Bangalore

TEJUS
CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	09-11-2020	07-12-2020	14days	8.135	22500	470	20.89	20.74
2	09-11-2020	07-12-2020	14days	8.144	22500	468	20.80	
3	09-11-2020	07-12-2020	14days	8.146	22500	462	20.53	

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Authorised Signatory

AE(Civil)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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CONSULTANTS

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Construction of Two RO plant in ward no. 07 Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	13-11-2020	11-12-2020	14days	8.134	22500	468	20.80	20.77
2	13-11-2020	11-12-2020	14days	8.141	22500	468	20.80	
3	13-11-2020	11-12-2020	14days	8.141	22500	466	20.71	

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Authorised Signatory

AE(L-7)

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore